

certainly be welcomed, it would in any case depend on the splendid work the editors have done for the current printed edition.

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Kardinalität und Kardinäle. Wissenschaftshistorische Aufarbeitung der Korrespondenz zwischen Georg Cantor und katholischen Theologen seiner Zeit

By Christian Tapp. *Boethius: Texte und Abhandlungen zur Geschichte der Mathematik und der Naturwissenschaften*, vol. 53. Stuttgart (Franz Steiner Verlag). 2005. ISBN 3-515-08620-X. 607 pp. 70 EUR

Cantor's set theory was both a technical investigation of finite and especially infinite collections of mathematical objects such as points, and a novel study of the actual infinite with his theories of transfinite numbers and of the various kinds of orderings of objects. The latter aspects attracted the interest of nonmathematicians, especially a cohort of philosophers and theologians. Cantor himself advertised this response in the later 1880s when he wrote some papers on the history and philosophy of the infinite, quoting from letters that he had received. This aspect of his work has been duly noted by his historians, and in the 1991 selected edition of his correspondence; the book under review is a complete edition of all the pertinent letters that can be located.

This last clause needs some explanation. The main source of the letters is Cantor's drafts of his own letters, which are preserved in 3 letter-books. However, much of his *Nachlass* was lost in 1945, including (seemingly) almost all the letters sent to him and a further 17 letter-books. While the surviving books date from periods in which these exchanges were quite intense (the mid-1880s and the mid-1890s), there must have been many more letters; indeed, some are mentioned in the ones available. In addition, while the editor has sought assiduously for the *Nachlässe* of the correspondents, little has come to light in the way of new letters by Cantor or of drafts to him. Thus of the 95 items here, only three are not written by Cantor. He is of course the main figure, but it is a pity that so little from the other sides is available.

The author–editor, about whom no information is supplied, has fulfilled his task very diligently. The first part of the book contains a short biography of Cantor and a review of set theory (including its theological sides), the rather turbulent development of Christianity (or rather, Christianities) in Germany at that time, the topics covered in the letters, and the Bacon question (explained below). Then in the second part he edits the letters, organizing them by alphabetical order of the surnames of the correspondents. Each section begins with a biography of the correspondent and usually at least one photograph of him, possible personal contact with Cantor, and details of the letter's provenance and of any previous publication. The textual notes include explanations, variants and cancellations, and details of people, publications, and other matters raised in the letters. The book ends with a rich bibliography, though I was very surprised to find no listing of two recent writings related to these aspects of Cantor's work [Heuser-Kessler, 1991, Bandmann, 1992]. For some reason, citations of subjects in the index are largely confined to the first part.

The title of the book is witty but inaccurate; of the 30 correspondents 4 were not Catholic, only one of the others was a cardinal at the time of writing, and just one other was to be elevated later. Quite a few were Jesuits. The preponderance of Catholics is striking; one stimulus for them was an encyclical of 1879 by Pope Leo XIII encouraging members of the flock to engage with modern science and philosophy. He is a correspondent in that Cantor sent him a copy of one of his essays claiming that Francis Bacon wrote the plays of Shakespeare. This question, much discussed in the late 19th century, especially in Germany, occurs in several other exchanges: it held its own religious implication

in that, if true, it suggested that Bacon was actually a “cryptocatholic” (p. 432). Cantor’s own religious stance was quite a cocktail, for his father was a Jew converted to Lutheranism while his mother was Catholic; nominally a Protestant, he himself did not belong to any organized brand.

Occasional topics in the letters include recent or possible professorial promotions and appointments in German universities. The principal issue for Cantor’s correspondents was the place of the actual infinite in religion and nature, and his apparent refutation of the traditional view that it lay in God’s hands and outside human reach, “beyond” the finite numbers. Cantor replaced this view by the simple ruse of proposing that ∞ was a new beginning, as the smallest transfinite ordinal; it launched a new series of successors $\infty + 1$, $\infty + 2$, ... but had *no* predecessor. For him the study of these numbers was indeed human work; God was to be found in connection with the *absolute* infinite, where the greatest ordinal and cardinal numbers are to be found, but only to perplex mankind (p. 426). I was a little surprised that he did not regularly explain his theory in such terms; instead he usually preferred to claim that his theory was consistent, which he could only offer as a belief unsupported by any mathematical proof.

There is little new to learn from these letters about Cantor’s conception of set theory itself. However, the edition highlights aspects of it that were important to him, and of which he clearly possessed a remarkably detailed historical knowledge.

References

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Felix Hausdorff. *Gesammelte Werke. Band VII: Philosophisches Werk*

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Equipped with a scholarly introduction of 83 pages, this carefully prepared volume of Hausdorff’s philosophical publications (all in German) supplements the volumes comprising the mathematical works for which he is most famous. (Vol. VIII will contain Hausdorff’s literary publications.) Impressed by the German philosopher Friedrich Nietzsche (1844–1900), whose influential work *Also sprach Zarathustra* had appeared in four volumes [Nietzsche, 1883–1885], Hausdorff (under the nom de plume of Paul Mongré) published his *Sant’ Ilario* (378 pages) in 1897 with the same publishing house that had issued Nietzsche’s volumes. In an announcement for the journal *Die Zukunft* (The Future), Hausdorff emphasized that this collection of aphorisms is addressed first of all to “the species of free, Epicurean, well-humored men, who have outgrown all solemn narrow-mindedness and rattling obstinacy of inferior stages of civilization.” He had written it “in good humor, good air and a radiant sky” near the Ligurian sea, pondering the thoughts of Nietzsche.

One year later [1898], again under the pseudonym Paul Mongré, *Das Chaos in kosmischer Auslese: Ein erkenntnis-kritischer Versuch* (Chaos in Cosmic Selection; An Attempt of a Theory of Cognition) was published, a book of more than 200 pages. It is a testimony of Hausdorff’s wide-ranging intellectual talents that he composed the announcement,